%Experiment 8:Given is a linear block code with the generator matrix G.

%G=[[1 1 0 0 1 0 1][0 1 1 1 1 0 0][1 1 1 0 0 1 1]]

%a. Calculate the number of valid code words N and the code rate RC.

%Specify the complete Code set C.

%KANISHK

%2021UCA1810

clc; clear; close all;

G=[1 0 0 1 1 1 1; 0 1 0 1 0 1 0;0 0 1 0 1 1 0];

sz=size(G); k=sz(1); sa=2^k-1; N=sa+1; M=0:sa;

X=de2bi(M,'left-msb'); codewords=zeros(N,k+sz(2)); for i=1:N

codewords(i,:)=[X(i,:),mod(X(i,:)\*G,2)]; end

codewords

*codewords =*

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* | *0* |
| *0* | *0* | *1* | *0* | *0* | *1* | *0* | *1* | *1* | *0* |
| *0* | *1* | *0* | *0* | *1* | *0* | *1* | *0* | *1* | *0* |
| *0* | *1* | *1* | *0* | *1* | *1* | *1* | *1* | *0* | *0* |
| *1* | *0* | *0* | *1* | *0* | *0* | *1* | *1* | *1* | *1* |
| *1* | *0* | *1* | *1* | *0* | *1* | *1* | *0* | *0* | *1* |
| *1* | *1* | *0* | *1* | *1* | *0* | *0* | *1* | *0* | *1* |
| *1* | *1* | *1* | *1* | *1* | *1* | *0* | *0* | *1* | *1* |

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